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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,272	09/30/2003	Satoshi Deishi	009683-483	2065

21839 7590 05/10/2006

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EXAMINER

CUNNINGHAM, GREGORY F

ART UNIT	PAPER NUMBER
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2628

DATE MAILED: 05/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/673,272	Applicant(s) DEISHI, SATOSHI	
	Examiner Gregory F. Cunningham	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2-10-06, 3-8-06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to communications of application received 3/08/2006.
2. The disposition of the claims is as follows: claims 1 - 17 are pending in the application.

Claims 1, 7, 10 and 13 are independent claims.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-5, 7, 9, 10, 12, 13 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata (US 6,111,658).

A. Tabata discloses claim 1, "An image processing apparatus using dithering to represent shades [col. 5, lns. 53-60, wherein halftones correspond to "shades"], comprising:

a storage portion storing a basic dither pattern configured of a plurality of basic patterns [col. 2, lns. 9-21, 42-56 and col. 6, lns. 53-65, wherein 'matrix storing step of storing in a first memory' corresponds to "storing portion for storing"; 'pieces of ordered information', 'mask pattern determined in accordance with pieces of information', 'dithering step', 'basic matrix' and 'threshold matrix' contribute to correspond to "basic dither pattern configured of a plurality of basic patterns" – see Fig. 3];

a dithering unit using said basic dither pattern to dither image data, said plurality of basic patterns each including a plurality of pixels [col. 2, lns. 9-53; col. 3, ln. 56 – col. 4, ln. 5];

a first assignment portion assigning an initial value to a single pixel in one of said plurality of basic patterns as a number indicating an order to be followed to illuminate a dot in a dither matrix [Abstract and Fig. 3]; and

a second assignment portion selecting from said basic patterns longitudinally and laterally arranged a basic pattern remotest from any pixel assigned a number, and assigning a subsequent number to a pixel in said basic pattern selected, wherein said second assignment portion repeats assignment to assign in said basic dither pattern a number indicating an order to be followed to illuminate a dot [Abstract, col. 6, lns. 53-56, col. 7, lns. 57-67, col. 9, lns. 50-67 and Figs. 3, 6A and 8, which correspond to Applicant's Fig. 25]" [as detailed].

While Tabata does not appear to explicitly state first and second assignment units, however Tabata arrives at a dithering pattern (Figs. 3, 6A, 8) corresponding to the Applicant's dithering pattern (Fig. 25) and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign initial values and longitudinally and laterally arrange a basic pattern remotest from any pixel assignment number and subsequent numbering to yield a corresponding and similar dithering basic pattern matrix of Tabata.

B. Per independent claims 7, 10 and 13, these are directed to a method, program product, and apparatus, respectively, for the apparatus of independent claim 1, and therefore are rejected to independent claim 1. Although claim 1 refers to a single pixel while claim 13 refers to each pixel, Tabata discloses the "each pixel" feature as disclosed, supra for claim 1, and revealed in Figs. 3, 6A and 8.

C. Tabata discloses claim 3, "The apparatus of claim 1, further comprising: a third assignment portion assigning, when said basic dither pattern has all of its basic patterns each

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with a single pixel assigned a number, a subsequent number to a pixel adjacent to a pixel assigned a number by said first assignment portion; and a fourth assignment portion selecting from said basic patterns longitudinally and laterally arranged a basic pattern remotest from any basic pattern including a pixel assigned a number after said second assignment portion has performed said assignment, and assigning a subsequent number to a pixel adjacent to a pixel in that basic pattern that is assigned a number, wherein said fourth assignment portion repeats assignment to assign in said basic dither pattern a number indicating an order to be followed to illuminate a dot” supra for claim 1 – see Figs. 3, 6A and 8.

While Tabata does not appear to explicitly state third and fourth assignment portions, however Tabata arrives at a dithering pattern (Figs. 3, 6A, 8) corresponding to the Applicant’s dithering pattern (Fig. 25) and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign a subsequent number to a pixel adjacent to a pixel assigned a number and longitudinally and laterally arrange a basic pattern remotest from any basic pattern including a pixel assigned a number to yield a corresponding and similar dithering basic pattern matrix of Tabata.

D. Per dependent claims 9 and 12, these are directed to a method, program product, and apparatus, respectively, for the apparatus of dependent claim 3, and therefore are rejected to dependent claim 3.

E. Tabata discloses claim 4, “The apparatus of claim 1, further comprising a table storage portion storing a table correlating a shade of said image data to a shade in a basic dither pattern, wherein said dithering unit uses said basic dither pattern and said table to dither image data [col. 6, ln. 32 - col. 7, ln. 24, wherein mask pattern areas 23ay, 23am, 23ac or 23ak of the RAM 23

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correspond to table storage portion with correlating shade]” supra for claim 1 and [as detailed].

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign a subsequent number to a pixel adjacent to a pixel assigned a number and longitudinally and laterally arrange a basic pattern remotest from any basic pattern including a pixel assigned a number to yield a corresponding and similar dithering basic pattern matrix and mask pattern areas exemplified by RAM 23 of Tabata.

F. Tabata discloses claim 5, “The apparatus of claim 4, further comprising an image forming unit forming an image based on image data dithered by said dithering unit [corresponds to ‘plurality of matrices and pieces of adjustment information in association with each other, the plurality of matrices being different from each other in an arrangement of elements, and the pieces of adjustment information being used for adjusting the mask patterns so that the image which is printed on the recording medium conforms in gradation to the image to be printed’ - col. 4, lns. 28-45]” supra for claim 1 and [as detailed].

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign a subsequent number to a pixel adjacent to a pixel assigned a number and longitudinally and laterally arrange a basic pattern remotest from any basic pattern including a pixel assigned a number to yield a corresponding and similar dithering basic pattern matrix and mask pattern areas exemplified by RAM 23 and the pieces of adjustment information being used for adjusting the mask patterns so that the image which is printed on the recording medium conforms in gradation to the image to be printed of Tabata.

G. Per dependent claims 15 and 16, these are directed to an apparatus for the apparatus of dependent claims 4 and 5, and therefore are rejected to dependent claims 4 and 5.

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5. Claims 2, 8, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata as applied to claims 1, 7, 10 and 13 above, and further in view of Tada, (US 4,866,534).

A. Tabata discloses claim 2, “The apparatus of claim 1, wherein in said basic pattern a number indicating an order to be followed to illuminate a dot is assigned to allow the dither matrix to be a dither matrix of dot convergence type” supra for claim 1.

However Tabata does not appear to disclose “wherein in said basic pattern a number indicating an order to be followed to illuminate a dot is assigned to allow the dither matrix to be a dither matrix of dot convergence type”, but Tada does in col. 3, ln. 60 – col. 4, ln. 19, wherein ‘in order to avoid checker pattern shown in Figs. 3(a) and 3(b) are selected according to whether is less than 50% or not. The dither matrix shown in FIG. 3(a) which is selected when the average density is smaller than 50% is a convergence type (a swirl type) wherein black dots are likely to converge at low densities, while that shown in FIG. 3(b) which is selected when the average density is equal to or larger than 50% is a divergence type wherein black dots are likely to scatter in the background.”

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply dithering basic pattern matrix disclosed by Tabata in combination with convergence type disclosed by Tada, and motivated to combine the teachings because it would avoid a checked pattern as revealed by Tada in col. 3, lines 60-63.

B. Per dependent claims 8, 11 and 14, these are directed to a method, program product, and apparatus, respectively, for the apparatus of dependent claim 2, and therefore are rejected to dependent claim 2.

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6. Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata as applied to claims 5 and 16 above, and further in view of Sakatani et al., (US 6,538,771 B1), hereinafter Sakatani.

A. Tabata discloses claim 6, “The apparatus of claim 5, further comprising: a detector detecting a density of a pattern formed by said image forming unit; and a table modification portion driven by the density detected by said detector to modify said table” supra for claim 5. However Tabata does not appear to disclose “further comprising: a detector detecting a density of a pattern formed by said image forming unit; and a table modification portion driven by the density detected by said detector to modify said table”, but Sakatani does in col. 7, lns. 36-44, wherein replacement of detected block corresponds to “table modification”.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply dithering basic pattern matrix disclosed by Tabata in combination with image density detection and replacement disclosed by Sakatani, and motivated to combine the teachings because it would require less storage capacity by modifying the existing table as revealed by Sakatani in col. 1, lns 39-41.

B. Per dependent claim 17, this is directed to an apparatus for the apparatus of dependent claim 6, and therefore is rejected to dependent claim 6.

Responses

7. Responses to this action should be mailed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

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Inquiries

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory F. Cunningham whose telephone number is (571) 272-7784.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The Central FAX Number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Gregory F. Cunningham
Examiner
Art Unit 2628

gfc

5/8/2006